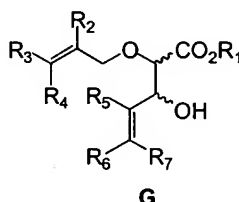


## **B. In the Claims**

Please cancel claims 1-5, 9-10, 12-17, 19-20, 24-27, 29-31, 33, 36-37, 41-53, 55-58, 61-65, 67-72, 75-78, 81-89, 100-104, 107-110, 112-116, 118-121, 124-128, 131-135, and 138-173 without prejudice. Upon entry of the amendment, the listing of claims will be as follows replacing all prior listings.

1-5 (Canceled)

6. (Currently amended) A ~~E~~ compounds of formula **G**, ~~where:~~

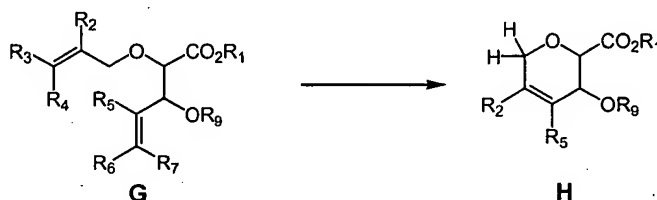


wherein:

- a) R<sub>1</sub> is selected from the group consisting of alkyl, substituted alkyl and aryl;
  - b) R<sub>2</sub> and R<sub>5</sub> are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
  - c) R<sub>3</sub> = R<sub>4</sub> = R<sub>6</sub> = R<sub>7</sub> = hydrogen, or R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub>, R<sub>7</sub> are selected such that three out of four are hydrogen and the fourth is selected from the group consisting of alkyl, substituted alkyl and aryl.
7. (Currently amended) The compound of claim 6, wherein the compound includes all ~~All~~ stereoisomers of a compound of formula **G**, wherein R<sub>1</sub> = ethyl and R<sub>2</sub> = R<sub>3</sub> = R<sub>4</sub> = R<sub>5</sub> = R<sub>6</sub> = R<sub>7</sub> = hydrogen, including (2R,3R)-2-Allyloxy-3-hydroxy-pent-4-enoic acid ethyl ester, (2S,3S)-2-

Allyloxy-3-hydroxy-pent-4-enoic acid ethyl ester, (2R,3S)-2-Allyloxy-3-hydroxy-pent-4-enoic acid ethyl ester, and (2S,3R)-2-Allyloxy-3-hydroxy-pent-4-enoic acid ethyl ester.

8. (Currently amended) A process for preparing compound of formula **H** comprising contacting compound of formula **G** under conditions suitable to produce compound of formula **H**, where:



wherein:

- a)  $R_1$  is selected from the group consisting of alkyl, substituted alkyl and aryl;
- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- c)  $R_3 = R_4 = R_6 = R_7 = \text{hydrogen}$ , or  $R_3, R_4, R_6, R_7$  are selected such that three out of four are hydrogen and the fourth is selected from the group consisting of alkyl, substituted alkyl and aryl; and
- d)  $R_9$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl and hydroxyl protecting group.

9-10. (Canceled).

11. (Currently amended). ~~A~~ The process according to claim 8, wherein carboxylic ester of formula **G** is contacted with a ring-closing metathesis catalyst selected from the group consisting of 2,6-diisopropylphenylimidoneophylidene molybdenum (IV) bis-(tert-butoxide), 2,6-diisopropylphenylimidoneophylidene molybdenum (IV) bis-(hexafluoro-tert-butoxide), 2,6-

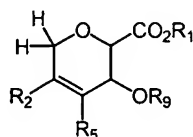
diisopropylphenylimidoneophylidene[racemic-BIPHEN] molybdenum (IV), 2,6-diisopropylphenylimidoneophylidene[(R)-(+)-BIPHEN] molybdenum (IV), 2,6-diisopropylphenylimidoneophylidene[(S)-(-)-BIPHEN] molybdenum (IV), bis-(tricyclohexylphosphine)benzylidene ruthenium (IV) dichloride, bis-(tricyclohexylphosphine)-3-methyl-2-butenylidene ruthenium (IV) dichloride, bis-(tricyclopentylphosphine)benzylidene ruthenium (IV) dichloride, bis-(tricyclopentylphosphine)-3-methyl-2-butenylidene ruthenium (IV) dichloride, tricyclohexylphosphine-(1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene)-benzylidene ruthenium (IV) dichloride, tricyclohexylphosphine-(1,3-bis(2,6-diisopropylphenyl)-4,5-dihydroimidazol-2-ylidene)-benzylidene ruthenium (IV) dichloride, (1,3-bis(2,4,6-trimethylphenyl)-4,5-dihydroimidazol-2-ylidene)-2-isopropoxyphenylmethylene ruthenium (IV) dichloride, (tricyclopentylphosphine)-2-isopropoxyphenylmethylene ruthenium (IV) dichloride, and (tricyclopentylphosphine)-2-methoxy-3-naphthylmethylene ruthenium (IV) dichloride under conditions suitable to produce compound of formula **H**.

12-17 (Canceled).

18. (Currently amended). ~~A~~ The process according to claim 8, wherein  $R_1$  = ethyl, and  $R_2 = R_3 = R_4 = R_5 = R_6 = R_7 = R_9$  = hydrogen, or  $R_1$  = ethyl, and  $R_6$  = methyl, and  $R_2 = R_3 = R_4 = R_5 = R_7 = R_9$  = hydrogen, or  $R_1$  = ethyl, and  $R_6$  = phenyl, and  $R_2 = R_3 = R_4 = R_5 = R_7 = R_9$  = hydrogen.

19-20. (Canceled).

21. (Currently amended). ~~A~~ Compounds of formula **H**, ~~where:~~

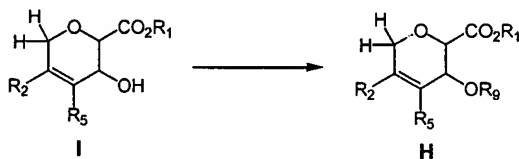


wherein:

- a)  $R_1$  is selected from the group consisting of alkyl, substituted alkyl and aryl;
- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- c)  $R_9$  is selected from the group consisting of hydrogen, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl and hydroxyl protecting group.

22. (Currently amended) The compound of claim 21, wherein the compound includes all AH stereoisomers of a compound of formula H, wherein  $R_1$  = ethyl and  $R_2 = R_5 = R_9$  = hydrogen, or  $R_1$  = ethyl and  $R_2 = R_5$  = hydrogen and  $R_9$  = acetyl, including (2R,3R)-3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3S)-3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3R)-3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2R,3S)-3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2R,3R) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3S) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2R,3S) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3R) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester.

23. (Currently amended) A process for preparing compound of formula H comprising contacting compound of formula I with a resolving enzyme and an acylating agent under suitable conditions to produce optically pure 3,6-dihydro-2H-pyran of formula H, ~~where:~~



wherein:

- a)  $R_1$  is selected from the group consisting of alkyl, substituted alkyl and aryl;

- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- c)  $R_9$  is selected from the group consisting of hydrogen, alkylcarbonyl, substituted alkylcarbonyl and arylcarbonyl.

24-27. (Canceled).

28. (Currently amended). A The process according to claim 23, wherein the ~~resolving enzyme~~ enzymatic resolution comprises an enzyme-catalyzed transesterification of a compound of formula I, wherein the enzymatic resolution includes the use of a lipase, esterase, peptidase, acylase or protease enzyme of mammalian, plant, fungal or bacterial origin is selected from the group consisting of Lipase Amano lipase PS-D (immobilized lipase from Pseudomonas cepacia), Amano Lipase PS-C (immobilized lipase from Pseudomonas cepacia), Roche Chirazyme L-3 (lipase, lyophilizate, from Candida Rugosa), Roche Chirazyme L-3 (purified lipase, lyophilizate, from Candida Rugosa), Roche Chirazyme L-3 (purified lipase, carrier-fixed, carrier 2, lyophilizate, from Candida rugosa), Roche Chirazyme L-5 (lipase, solution, from Candida antartica, type A), Roche Chirazyme L-5 (lipase, lyophilizate, from Candida antartica, type A), Roche Chirazyme L-5 (lipase, carrier-fixed, carrier 1, lyophilizate, from Candida antartica, type A), Roche Chirazyme L-10 (lipase, lyophilizate, from Alcaligines sp.), Altus Biologics 8 (lipase from Mucor meihei) and Altus Biologics 27 (lipase from Alcaligenes sp.), and wherein the acylating agent is selected from the group consisting of ethyl acetate, vinyl acetate, vinyl propionate, vinyl butyrate, isopropenyl acetate, 1-ethoxyvinyl acetate, trichloroethyl butyrate, trifluoroethyl butyrate, trifluoroethyl laureate, S-ethyl thiooctanoate, biacetyl monooxime acetate, acetic anhydride, succinic anhydride, amino acid and diketene, and where the reaction is carried out between 0°C and 40°C in a solvent or in mixtures of solvents selected from the group consisting of acetonitrile, dichloromethane, dichloroethane, diethyl ether, dioxane, tetrahydrofuran, dimethyl formamide, dimethyl acetamide, N-methylpyrrolidine, dimethyl

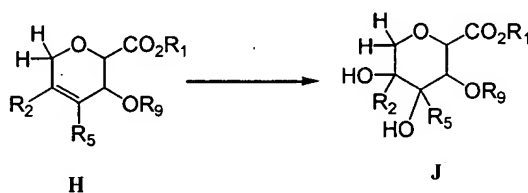
sulfoxide, benzene, toluene, dichlorobenzene, xylene, methanol, ethanol, isopropanol and water and wherein the optically pure 3,6-dihydro-2H-pyran H is isolated by the use of at least one method selected from the group consisting of chromatography, crystallization, re-crystallization and distillation.

29-31. (Canceled).

32. (Currently amended). A The process according to claim 23, wherein R<sub>1</sub> is ethyl, R<sub>2</sub> and R<sub>5</sub> are hydrogen, and R<sub>9</sub> is selected from the group consisting of hydrogen and acetyl, and wherein the substituted 3,6-dihydro-2H-pyran H selected from the group consisting of (2R,3R) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3S) 3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, (2S,3R) 3-acetoxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester, and (2R,3S) 3-hydroxy-3,6-dihydro-2H-pyran-2-carboxylic acid ethyl ester.

33. (Canceled).

34. (Currently amended). A process for preparing compound of formula J, comprising contacting compound of formula H under conditions suitable to produce a substituted tetrahydropyran of formula J, ~~where:~~



wherein:

- a) R<sub>1</sub> is selected from the group consisting of alkyl, substituted alkyl and aryl;

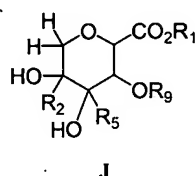
- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- c)  $R_9$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group.

35. (Currently amended). ~~A~~ The process according to claim 34, wherein the compound of formula **H** is contacted with any suitable mixtures of compounds selected from the group consisting of osmium tetroxide, potassium permanganate, thallium acetate, potassium periodate, silver acetate, N-methylmorpholine oxide, trimethylamine oxide, tert-butyl peroxide, iodine, potassium ferricyanide, pyridine, quinuclidine, dihydroquinine acetate, dihydroquinidine acetate, dihydroquinine anthraquinone-1,4-diyl diether ((DHQ)<sub>2</sub>AQN), dihydroquinine phthalazine-1,4-diyl diether ((DHQ)<sub>2</sub>PHAL), dihydroquinine 2,5-diphenyl-4,6-pyrimidinediyl diether ((DHQ)<sub>2</sub>PYR), dihydroquinidine anthraquinone-1,4-diyl diether ((DHQD)<sub>2</sub>AQN), dihydroquinidine phthalazine-1,4-diyl diether ((DHQD)<sub>2</sub>PHAL), dihydroquinidine 2,5-diphenyl-4,6-pyrimidinediyl diether ((DHQD)<sub>2</sub>PYR), tetraethyl ammonium hydroxide, tetraethyl ammonium acetate, and N,N,N',N'-tetramethylethylene diamine under conditions suitable to produce compound of formula **J**.

36-37. (Canceled).

38. (Currently amended). ~~A~~ The process according to claim 34, wherein  $R_1$  = ethyl, and  $R_2$  =  $R_5$  = hydrogen and  $R_9$  = acetyl, or  $R_1$  = ethyl, and  $R_2$  =  $R_5$  =  $R_9$  = hydrogen.

39. (Currently amended). ~~A~~ Compounds of formula **J**, ~~where:~~



wherein:

- a)  $R_1$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- c)  $R_9$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, substituted alkylcarbonyl, alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[[]].

~~With~~ with the further proviso that:

- 1. ~~S~~Stereoisomers (2R,3R,4S,5S), (2R,3S,4S,5R), (2R,3R,4R,5R), (2R,3R,4S,5R), (2S,3R,4R,5R) ~~cannot do not~~ do not have  $R_1$  = hydrogen or methyl and  $R_2 = R_5 = R_9$  = hydrogen
- 2. ~~S~~Stereoisomer (2S,3S,4R,5R) ~~cannot does not~~ does not have  $R_1$  = hydrogen or methyl and  $R_2 = R_5 = R_9$  = hydrogen[[]].

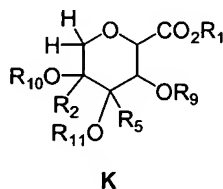
40. (Currently amended). The ~~C~~Compounds according to claim 39, wherein the compound of formula J is selected from the group consisting of (1R,2R,3R,4R) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2R,3S,4S) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2S,3R,4R) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2S,3S,4S) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2S,3R,4R) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2S,3S,4S) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2R,3R,4R) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2R,3S,4S) 3-acetoxy-4,5-dihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2R,3R,4R) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2R,3S,4S) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid



ethyl ester, (1S,2S,3R,4R) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2S,3S,4S) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2S,3R,4R) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1R,2S,3S,4S) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, (1S,2R,3R,4R) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester, and (1S,2R,3S,4S) 3-4,5-trihydroxy-tetrahydropyran-2-carboxylic acid ethyl ester.

41-53. (Canceled).

54. (Currently amended). A ~~C~~compounds of formula **K**, ~~where:~~



wherein:

- a)  $R_1$  is selected from the group consisting of alkyl, substituted alkyl and aryl;
- b)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- c)  $R_9$ ,  $R_{10}$  and  $R_{11}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[[]].

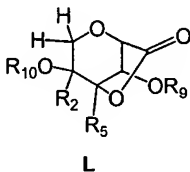
~~W~~with the further proviso that

1. ~~S~~tereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5S), (2R, 3S, 4R, 5S) ~~cannot~~ do not have  $R_1$  = methyl and  $R_2 = R_5$  = hydrogen and  $R_9 = R_{10} = R_{11}$  = acetyl;

2. ~~S~~tereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5R) ~~cannot~~ do not have  $R_1 = \text{methyl}$  and  $R_2 = R_5 = R_9 = R_{10} = R_{11} = \text{hydrogen}$ [.];
3. ~~S~~tereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5R) ~~cannot~~ do not have  $R_1 = R_2 = R_5 = R_9 = R_{10} = R_{11} = \text{hydrogen}$ ;
- 4 2. ~~S~~tereoisomers (2S, 3S, 4R, 5R), (2R, 3S, 4R, 5R) ~~cannot~~ do not have  $R_1 = R_{10} = R_{11} = \text{methyl}$  and  $R_2 = R_5 = \text{hydrogen}$  and  $R_9 = \text{acetyl}$ ;
- 5 3. ~~S~~tereoisomers (2S, 3S, 4R, 5R), (2R, 3S, 4R, 5R) ~~cannot~~ do not have  $R_1 = R_{10} = R_{11} = \text{methyl}$  and  $R_2 = R_5 = \text{hydrogen}$  and  $R_9 = \text{benzoyl}$ ;
- 6 4. ~~S~~tereoisomer (2S, 3R, 4R, 5S) ~~cannot~~ does not have  $R_1 = R_2 = R_5 = \text{hydrogen}$  and  $R_9 = R_{10} = R_{11} = \text{acetyl}$ ; and
- 7 5. ~~S~~tereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_1 = \text{methyl}$   $R_2 = R_5 = R_{11} = \text{hydrogen}$  and  $R_9 = R_{10} = \text{benzyl}$ .

55-58. (Canceled).

59. (Currently amended). A ~~C~~ompounds of formula L, ~~where:~~



wherein:

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;

- b)  $R_9$  and  $R_{10}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[[]].

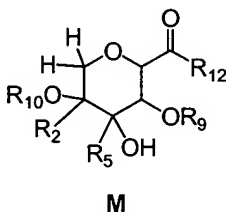
With the further proviso that:

1. Stereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{10} =$  hydrogen[[]];
2. Stereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_2 = R_5 = R_{10} =$  hydrogen and  $R_9 =$  benzoyl;
3. Stereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 = R_{10} =$  benzoyl; and
4. Stereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 = R_{10} =$  benzyl.

60. (Currently amended). The compound according to claim 59, wherein the compound of formula L is selected from the group consisting of (1R,4S,5S,8R)-8-acetoxy-4-hydroxy-2,6-dioxabicyclo[3.2.1]octan-7-one, and (1R,4S,5S,8R)-4,8-hydroxy-2,6-dioxabicyclo[3.2.1]octan-7-one.

61-65. (Canceled).

66. (currently amended) A compound of formula M, ~~where~~



wherein:

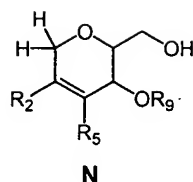
- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_9$  and  $R_{10}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[.]; and
- c)  $R_{12}$  = alkyl, substituted alkyl, aryl, hydroxy, alkyloxy, substituted alkyloxy, aryloxy, amino, alkylamino, arylamino, nitrogen containing saturated heterocyclic compound, O-protected amino acid and solid support[.].

With the further proviso that:

- 1. ~~S~~Stereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5R) ~~cannot~~ do not have  $R_{12}$  = hydroxy and  $R_2 = R_5 = R_9 = R_{10}$  = hydrogen[.];
- 2. ~~S~~Stereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5R) ~~cannot~~ do not have  $R_{12}$  = methoxy and  $R_2 = R_5 = R_9 = R_{10}$  = hydrogen[.];
- 3. ~~S~~Stereoisomers (2R, 3R, 4S, 5S), (2R, 3S, 4S, 5R), (2R, 3R, 4R, 5R), (2R, 3R, 4S, 5R), (2S, 3R, 4R, 5R), (2S, 3S, 4R, 5S) ~~cannot~~ do not have  $R_{12}$  = amino and  $R_2 = R_5 = R_9 = R_{10}$  = hydrogen[.]; and
- 4. ~~S~~Stereoisomer (1S, 4R, 5R, 8S) ~~cannot~~ does not have  $R_2 = R_5$  = hydrogen and  $R_9 = R_{10}$  = benzyl and  $R_{12}$  = methoxy.

67-71. (Canceled).

72. (Currently amended) A compound of formula N, ~~where:~~



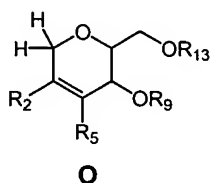
wherein:

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- b)  $R_9$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group.

~~With~~ with the further proviso that for compounds of formula N, stereoisomers (2R,3S), (2S,3R) and (2R,3R) ~~cannot~~ do not have  $R_2 = R_5 = R_9 =$  hydrogen.

73. (Currently amended). The compound of claim 72, wherein the compound is the (2S,3S) stereoisomer of formula N, wherein  $R_2 = R_5 = R_9 =$  hydrogen ((2S,3S)-2-Hydroxymethyl-3,6-dihydro-2H-pyran-3-ol).

74. (Currently amended). A ~~E~~ compounds of formula O, ~~where:~~



wherein:

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;

- b)  $R_9$  is selected from the group consisting of alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group; and
- c)  $R_{13}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, alkylcarbonyl, arylcarbonyl, and hydroxyl protecting group.

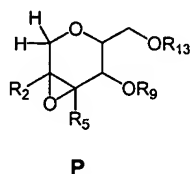
~~W~~With the further proviso that for ~~the~~ Ccompounds of formula ~~O~~,

- 1) ~~S~~Stereoisomers (2R,3S), (2S,3R) and (2R,3R) ~~cannot~~ do not have  $R_9 = R_{13} =$  acetyl;
- 2) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 2$ -bromoallyl and  $R_{13} =$  tert-butyl dimethylsilyl;
- 3) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 2$ -bromobenzyl and  $R_{13} =$  tert-butyl dimethylsilyl;
- 4) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 2$ -bromocyclopent-1-ene and  $R_{13} =$  tert-butyl dimethylsilyl;
- 5) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 2$ -bromocyclohex-1-ene and  $R_{13} =$  tert-butyl dimethylsilyl;
- 6) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 =$  trichloromethylimide  $[C(=NH)CCl_3]$  and  $R_{13} =$  acetyl;
- 7) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 =$  trichloromethylimide  $[C(=NH)CCl_3]$  and  $R_{13} =$  tert-butyl dimethylsilyl;
- 8) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 4$ -methoxyphenylaminocarboxy  $[4-CH_3OC_6H_4NHC(=O)]$  and  $R_{13} =$  benzoyl;
- 9) ~~S~~Stereoisomer (2R,3S) ~~cannot~~ does not have  $R_9 = 4$ -methoxyphenylaminocarboxy  $[4-CH_3OC_6H_4NHC(=O)]$  and  $R_{13} =$  tert-butyl dimethylsilyl;
- 10) ~~S~~Stereoisomer (2S,3R) ~~cannot~~ does not have  $R_9 =$  allyl and  $R_{13} =$  tosyl;
- 11) ~~S~~Stereoisomer (2R,3R) ~~cannot~~ does not have  $R_9 = R_{13} =$  benzoyl;

- 12) ~~S~~stereoisomer (2R,3R) ~~cannot~~ does not have  $R_9$  = 2-bromoallyl and  $R_{13}$  = tert-butyl dimethylsilyl.

75-78. (Canceled).

79. (Currently amended). ~~A~~ Compounds of formula P, where:



wherein:

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl; and
- b)  $R_9$  and  $R_{13}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[[.]].

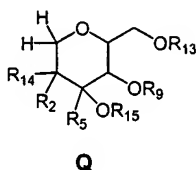
~~With~~ with the further proviso that:

- 1. ~~S~~stereoisomer (1S,4R,5R,6R) ~~cannot~~ does not have  $R_9$  = hydrogen and  $R_{13}$  = tert-butyl dimethylsilyl; and
- 2. ~~S~~stereoisomer (1S,4R,5R,6R) ~~cannot~~ does not have  $R_9$  = hydrogen and  $R_{13}$  = tert-butyl diphenylsilyl.

80. (Currently amended). The compound of claim 79, wherein the compound is selected from the group of the ~~S~~stereoisomers (1R,4S,5S,6S), (1S,4S,5S,6R), (1R,4R,5R,6S), (1R,4S,5R,6S), (1S,4R,5S,6R), (1S,4S,5R,6R), (1R,4R,5S,6S) of compounds of formula P, wherein  $R_2 = R_5 = R_9$  = hydrogen and  $R_{13}$  = tert-butyl dimethylsilyl.

81-89. (Canceled).

90. (Currently amended). A Compounds of formula **Q**, ~~where:~~



wherein:

- a) R<sub>2</sub> and R<sub>5</sub> are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b) R<sub>9</sub> is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group[.];
- c) R<sub>13</sub> = -C(O)OR<sup>8</sup>, wherein R<sup>8</sup> is selected from the group consisting of alkyl, substituted alkyl and aryl and more specifically R<sub>8</sub> is selected from the group consisting of methyl, methoxymethyl, 9-fluorenylmethyl, ethyl, 2,2,2-trichloromethyl, 1,1-dimethyl-2,2,2-trichloroethyl, 2-(trimethylsilyl)ethyl, 2-(phenylsulfonyl)ethyl, isobutyl, tert-Butyl, vinyl, allyl, 4-nitrophenyl, benzyl, 2-nitrobenzyl, 4-nitrobenzyl, 4-methoxybenzyl, 2,4-dimethoxybenzyl, 3,4-dimethoxybenzyl, 2-(methylthiomethoxy)ethyl, 2-dansylethyl, 2-(4-nitrophenyl)ethyl, 2-(2,4-dinitrophenyl)ethyl, 2-cyano-1-phenylethyl, thiobenzyl and 4-ethoxy-1-naphthyl[.];
- d) R<sub>14</sub> is selected from the group consisting of hydrogen, halogen, alkyl, substituted alkyl, aryl, heteroaryl, saturated heteroaryl, cyano, azido, amino, alkylamino, arylamino, hydroxy, alkoxy, aryloxy, alkylthio, arylthio, alkylcarboxy,



arylcarboxy, N-protected amino acid, O-protected amino acid and a solid support[[.]]; and

e)  $R_{15}$  = hydrogen.

91. Currently amended) The ~~C~~compounds according to claim 90, wherein  $R_{13} = -Si(R^8)_3$ , wherein  $R^8$  is selected from the group consisting of alkyl, substituted alkyl and aryl, and ~~more specifically~~  $R_{13}$  is further selected from the group consisting of trimethylsilyl, triethylsilyl, triisopropylsilyl, dimethylisopropylsilyl, diethylisopropylsilyl, dimethylhexylsilyl, tert-butyl dimethylsilyl, tert-butyl diphenylsilyl, tribenzylsilyl, tri-p-xylylsilyl, triphenylsilyl, diphenylmethylsilyl, di-tert-butylmethylsilyl, tris(trimethylsilyl)silyl, (2-hydroxystyryl)dimethylsilyl, (2-hydroxystyryl)diisopropylsilyl, tert-butylmethoxyphenylsilyl, and tert-butoxydiphenylsilyl,

~~W~~with the further proviso that:

1. ~~S~~stereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_9 = \text{benzyl}$  and  $R_2 = R_5 = R_{14} = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl dimethylsilyl}[[.]]$ ;
2. ~~S~~stereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_9 = R_2 = R_5 = R_{14} = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl dimethylsilyl}[[.]]$ ;
3. ~~S~~stereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_9 = R_2 = R_5 = R_{14} = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl diphenylsilyl}[[.]]$ ;
4. ~~S~~stereoisomer (2R,3S,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl diphenylsilyl}$  and  $R_{14} = \text{p-toluenecarboxy}[[.]]$ ;
5. ~~S~~stereoisomer (2R,3S,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl dimethylsilyl}$  and  $R_{14} = \text{trichloroacetamide}[[.]]$ ; and
6. ~~S~~stereoisomers (2R,3S,4S,5R) and (2S,3R,4R,5S) ~~cannot~~ do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = \text{tert-butyl dimethylsilyl}$  and  $R_{14} = 5,6\text{-dichlorobenzimidazole}$ .

92. (Currently amended) ~~The~~ Compounds according to claim 90, wherein R<sub>13</sub> is selected from the group consisting of benzyl, 2-nitrobenzyl, 2-trifluoromethylbenzyl, 4-methoxybenzyl, 4-nitrobenzyl, 4-chlorobenzyl, 4-bromobenzyl, 4-cyanobenzyl, 4-phenylbenzyl, 4-acylamino benzyl, 4-azidobenzyl, 4-(methylsulfinyl)benzyl, 2,4-dimethoxybenzyl, 4-azido-3-chlorobenzyl, 3,4-dimethoxybenzyl, 2,6-dichlorobenzyl, 2,6-difluorobenzyl, 1-pyrenylmethyl, diphenylmethyl, 4,4'-dinitrobenzhydryl, 5-benzosuberyl, triphenylmethyl (trityl),  $\alpha$ -naphthyl diphenylmethyl, (4-methoxyphenyl)-diphenyl-methyl (MMT), di-(p-methoxyphenyl)-phenylmethyl, tri-(p-methoxyphenyl)methyl, 4-(4'-bromophenacyloxy)-phenyldiphenylmethyl, 4,4',4''-tris(4,5-dichlorophthalimidophenyl)methyl, 4,4',4''-tris(levulinoyloxyphenyl)methyl, 4,4'-dimethoxy-3''-[N-(imidazolylmethyl)]trityl, 4,4'-dimethoxy-3''-[N-(imidazolylethyl)carbamoyl]trityl, 1,1-bis(4-methoxyphenyl)-1'-pyrenylmethyl, 4-(17-tetrabenzo[a,c,g,i]fluorenylmethyl)-4,4'-dimethoxytrityl, 9-anthryl, 9-(9-phenyl)xanthenyl, and 9-(9-phenyl-10-oxo)anthryl<sub>2</sub>

~~W~~with the further proviso that:

1. ~~S~~Stereoisomer (2R, 3S, 4S, 5R) ~~cannot~~ does not have R<sub>2</sub> = R<sub>5</sub> = hydrogen and R<sub>9</sub> = benzoyl and R<sub>13</sub> = (4-methoxyphenyl)-diphenyl-methyl and R<sub>14</sub> = N-(9H-purin-6-yl)-benzamide[.];
2. ~~S~~Stereoisomer (2R, 3S, 4S, 5R) ~~cannot~~ does not have R<sub>2</sub> = R<sub>5</sub> = hydrogen and R<sub>9</sub> = benzoyl and R<sub>13</sub> = (4-methoxyphenyl)-diphenyl-methyl and R<sub>14</sub> = 1H-pyrimidine-2,4-dione[.];
3. ~~S~~Stereoisomer (2R, 3S, 4S, 5R) ~~cannot~~ does not have R<sub>2</sub> = R<sub>5</sub> = hydrogen and R<sub>9</sub> = benzoyl and R<sub>13</sub> = (4-methoxyphenyl)-diphenyl-methyl and R<sub>14</sub> = N-(2-oxo-1,2-dihydro-pyrimidin-4-yl)-benzamide[.];
4. ~~S~~Stereoisomer (2R, 3S, 4S, 5R) ~~cannot~~ does not have R<sub>2</sub> = R<sub>5</sub> = hydrogen and R<sub>9</sub> = benzoyl and R<sub>13</sub> = (4-methoxyphenyl)-diphenyl-methyl and R<sub>14</sub> = N,N-dimethyl-N'-(6-oxo-6,9-dihydro-1H-purin-2-yl)-formamidine[.];

5. ~~S~~tereoisomer (2R, 3S, 4R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14}$  = hydrogen and  $R_{13}$  = triphenylmethyl[.];
6. ~~S~~tereoisomer (2R, 3S, 4S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14}$  = hydrogen and  $R_{13}$  = benzyl[.];
7. ~~S~~tereoisomers (2R, 3S, 4R, 5R) and (2R, 3S, 4R, 5S) ~~cannot~~ do not have  $R_2 = R_5 = R_9$  = hydrogen and  $R_{13}$  = triphenylmethyl and  $R_{14}$  = hydroxy[.]; and
8. ~~S~~tereoisomer (2R, 3R, 4R) and (2S, 3S, 4S) ~~cannot~~ does not have  $R_2 = R_9 = R_{14}$  = hydrogen and  $R_5$  = methyl and  $R_{13}$  = triphenylmethyl.

93. (Currently amended) The ~~C~~ompounds according to claim 90, wherein  $R_{13}$  is selected from the group consisting of alkyl, substituted alkyl and aryl and more specifically  $R_{13}$  is selected from the group consisting of methyl, tert-butyl, allyl, propargyl, p-chlorophenyl, p-methoxyphenyl, p-nitrophenyl, 2,4-dinitrophenyl, 2,3,5,6-tetrafluoro-4-(trifluoromethyl)phenyl, methoxymethyl, methylthiomethyl, (phenyldimethylsilyl)methoxymethyl, benzyloxymethyl, p-methoxybenzyloxymethyl, p-nitrobenzyloxymethyl, o-nitrobenzyloxymethyl, (4-methoxyphenoxy)methyl, guaiacolmethyl, tert-butoxymethyl, 4-pentenylloxymethyl, tert-butyldimethylsiloxymethyl, hexyldimethylsiloxymethyl, tert-butyldiphenylsiloxymethyl, 2-methoxyethoxymethyl, 2,2,2-trichloroethoxymethyl, bis(2-chloroethoxy)methyl, 2-(trimethylsilyl)ethoxymethyl, menthoxymethyl, 1-ethoxyethyl, 1-(2-chloroethoxy)ethyl, 1-[2-(trimethylsilyl)ethoxy]ethyl, 1-methyl-1-ethoxyethyl, 1-methyl-1-benzyloxyethyl, 1-methyl-1-benzyloxy-2-fluoroethyl, 1-methyl-1-phenoxyethyl, 2,2,2-trichloroethyl, 1-dianisyl-2,2,2-trichloroethyl, 1,1,1,3,3,3-hexafluoro-2-phenylisopropyl, 2-trimethylsilylethyl, 2-(benzylthio)ethyl, 2-(phenylselenyl)ethyl, tetrahydropyranyl, 3-bromotetrahydropyranyl, tetrahydrothiopyranyl, 1-methoxycyclohexyl, 4-methoxytetrahydropyranyl, 4-methoxytetrahydrothiopyranyl, 4-methoxytetrahydropyranyl S,S-dioxide, 1-[(2-chloro-4-methyl)phenyl]-4-methoxypiperidin-4-yl, 1-(2-fluorophenyl)-4-methoxypiperidin-4-yl, 1,4-dioxan-2-yl, tetrahydrofuranyl, and tetrahydrothiofuranyl,

~~W~~with the further proviso that:

1. ~~C~~ompounds of formula ~~Q~~ ~~cannot~~ do not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  allyl and  $R_{14} =$  hydroxyl[.];
2. ~~C~~ompounds of formula ~~Q~~ ~~cannot~~ do not have  $R_2 = R_5 =$  hydrogen and  $R_9 = R_{13} =$  methyl and  $R_{14} =$  methoxy[.];
3. ~~S~~tereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 =$   $R_{13} =$  methyl and  $R_{14} =$  methoxy[.];
4. ~~S~~tereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 =$  benzyl and  $R_{13} =$  methyl and  $R_{14} =$  hydroxyl[.];
5. ~~S~~tereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 =$  benzyl and  $R_{13} =$  methyl and  $R_{14} =$  methoxy[.];
6. ~~S~~tereoisomer (2R,3S,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  methyl and  $R_{14} =$  methoxy[.]; and
7. ~~S~~tereoisomer (2R, 3S, 4R) ~~cannot~~ does not have  $R_2 = R_5 = R_{14} =$  hydrogen and  $R_9 = R_{13} =$  methyl.

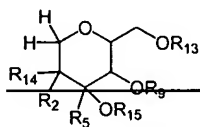
94. The ~~C~~ompounds according to claim 90, wherein  $R_{13} = -C(O)R^8$ , wherein  $R^8$  is selected from the group consisting of alkyl, substituted alkyl and aryl and more specifically  $R_8$  is selected from the group consisting of hydrogen, methyl, ethyl, tert-butyl, adamantyl, crotyl, chloromethyl, dichloromethyl, trichloromethyl, trifluoromethyl, methoxymethyl, triphenylmethoxymethyl, phenoxymethyl, 4-chlorophenoxymethyl, phenylmethyl, diphenylmethyl, 4-methoxycrotyl, 3-phenylpropyl, 4-pentenyl, 4-oxopentyl, 4,4-(ethylenedithio)pentyl, 5-[3-bis(4-methoxyphenyl)hydroxymethylphenoxy]- 4-oxopentyl, phenyl, 4-methylphenyl, 4-nitrophenyl, 4-fluorophenyl, 4-chlorophenyl, 4-methoxyphenyl, 4-phenylphenyl, 2,4,6-trimethylphenyl,  $\alpha$ -naphthyl, and benzoyl,

~~W~~with the further proviso that:

1. ~~S~~tereoisomer (2R,3S,4R,5R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  acetyl and  $R_{14} =$  N-acetamido[.];
2. ~~S~~tereoisomer (2R,3R,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  acetyl and  $R_{14} =$  acetoxy[.];
3. ~~S~~tereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_2 = R_5 = R_{14} =$  hydrogen and  $R_9 = R_{13} =$  tert-butylcarbonyl[.];
4. ~~S~~tereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14} =$  hydrogen and  $R_{13} =$  1-naphthoyl[.];
5. ~~S~~tereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14} =$  hydrogen and  $R_{13} =$  2-naphthoyl[.];
6. ~~S~~tereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14} =$  hydrogen and  $R_{13} =$  benzoyl[.];
7. ~~S~~tereoisomer (2R,3S,4R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{14} =$  hydrogen and  $R_{13} =$  4-methoxybenzoyl[.];
8. ~~S~~tereoisomer (2R, 3S, 4S, 5R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  3,4,5-trihydroxybenzoyl and  $R_{14} =$  (3,4,5-trihydroxyphenyl)carboxy[.];
9. ~~S~~tereoisomer (2R, 3S, 4R, 5R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  benzoyl and  $R_{14} =$  phenylcarboxy[.];
10. ~~S~~tereoisomer (2R, 3R, 4R, 5R) ~~cannot~~ does not have  $R_2 = R_5 = R_9 =$  hydrogen and  $R_{13} =$  benzoyl and  $R_{14} =$  phenylcarboxy[.];
11. ~~S~~tereoisomer (2R, 3S, 4R, 5R) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 = R_{13} =$  benzoyl and  $R_{14} =$  phenylcarboxy[.];
12. ~~S~~tereoisomer (2R, 3S, 4R, 5R) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen and  $R_9 = R_{13} =$  benzoyl and  $R_{14} =$  hydroxy[.];

13. ~~S~~compounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = 3-(3,4,5\text{-trimethoxyphenyl})\text{acryloyl}$  and  $R_{14} = \text{hydroxy}[[.]]$ ;
14. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = \text{formyl}$  and  $R_{14} = \text{hydroxy}[[.]]$ ;
15. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = \text{ethylcarbonyl}$  and  $R_{14} = \text{hydroxy}[[.]]$ ;
16. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{14} = \text{hydroxy}$  and  $R_{13} = \text{aminomethylcarbonyl}[[.]]$ ;
17. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{14} = \text{hydroxy}$  and  $R_{13} = 10\text{-aminodecylcarbonyl}[[.]]$ ;
18. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{14} = \text{hydroxy}$  and  $R_{13} = 5\text{-aminopentylcarbonyl}[[.]]$ ;
19. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{14} = \text{hydroxy}$  and  $R_{13} = \text{succinoyl}[[.]]$ ; and
20. ~~C~~ompounds of formula ~~Q~~ cannot do not have  $R_2 = R_5 = R_9 = \text{hydrogen}$  and  $R_{13} = 3,4,5\text{-trihydroxybenzoyl}$  and  $R_{14} = \text{hydroxy}$ .

95. (Currently amended) The ~~C~~ompounds of formula ~~Q~~ according to claim 90, wherein:

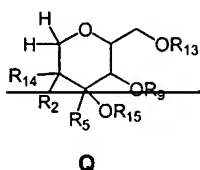


**Q**

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_9$ ,  $R_{13}$  are independently selected from the group consisting of hydrogen, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl and hydroxyl protecting group.

- c)  $R_{14}$  is cyano[.]; and
- d)  $R_{15}$  is selected from the group consisting of hydrogen, trimethylsilyl, tert-butyl dimethylsilyl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl and hydroxyl protecting group.

96. (Currently amended) The Compounds of formula Q according to claim 90, wherein:



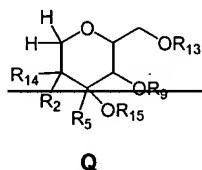
- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_9$ ,  $R_{13}$  and  $R_{15}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl, trimethylsilyl, tert-butyl dimethylsilyl and hydroxyl protecting group[.]; and
- c)  $R_{14}$  is selected from the group consisting of alkylthio and arylthio.

With the further proviso that:

1. ~~S~~tereoisomer (2R,3R,4S,5R) and (2R,3R,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen,  $R_9 = R_{13} = R_{15} =$  acetyl, and  $R_{14} =$  ethylthio[.];
2. ~~S~~tereoisomer (2R,3R,4S,5R) and (2R,3R,4S,5S) ~~cannot~~ does not have  $R_2 = R_5 =$  hydrogen,  $R_9 = R_{13} = R_{15} =$  acetyl, and  $R_{14} =$  n-propylthio[.];
3. ~~S~~tereoisomers (2R,3S,4S,5R) and (2R,3S,4S,5S) ~~cannot~~ do not have  $R_2 = R_5 =$   $R_9 = R_{13} = R_{15} =$  hydrogen and  $R_{14} =$  benzylthio[.]; and

4. ~~S~~tereoisomers (2R,3R,4S,5R) and (2R,3R,4S,5S) ~~cannot do not~~ have  $R_2 = R_5 =$  hydrogen,  $R_9 = R_{13} = R_{15} =$  acetyl, and  $R_{14} =$  benzylthio.

97. (Currently amended) ~~The C~~ompounds of formula ~~Q~~ according to claim 90, wherein:



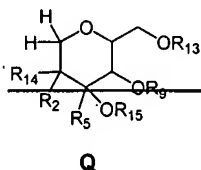
- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_9$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl, trimethylsilyl, tert-butyltrimethylsilyl, and hydroxyl protecting group[.];
- c)  $R_{13}$  is selected from the group consisting of alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl, trimethylsilyl, tert-butyltrimethylsilyl and hydroxyl protecting group[.];
- d)  $R_{15}$  is hydrogen; and
- e)  $R_{14}$  is  $\text{NHR}_{18}$  where  $R_{18}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl and amino protecting group[.];

~~W~~ith the further proviso that:

1. ~~S~~tereoisomers (2R,3S,4R,5R) ~~cannot do not~~ have  $R_2 = R_5 = R_9 = R_{15} =$  hydrogen,  $R_{13} =$  acetyl, and  $R_{14} =$  acetamido[.]; and
2. ~~S~~tereoisomers (2R,3S,4S,5S) and (2R,3R,4R,5S) ~~cannot do not~~ have  $R_2 = R_5 = R_9 = R_{15} =$  hydrogen,  $R_{13} =$  tert-butyltrimethylsilyl, and  $R_{14} =$  trichloroacetamido.



98. (Currently amended) ~~The Compounds of formula Q~~ according to claim 90, wherein:



- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_9$  and  $R_{15}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl, trimethylsilyl, tert-butyldimethylsilyl and hydroxyl protecting group[.];
- c)  $R_{13}$  is selected from the group consisting of alkyl, substituted alkyl, aryl, alkylcarbonyl, substituted alkylcarbonyl, arylcarbonyl, trimethylsilyl, tert-butyldimethylsilyl and hydroxyl protecting group. [.]; and
- d)  $R_{14}$  is selected from the group consisting of phthalimide, substituted phthalimide, maleimide, substituted maleimide and  $NR_{18}R_{19}$  where  $R_{18}$  and  $R_{19}$  are independently selected from the group consisting of alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl, heteroaryl, saturated heteroaryl and amino protecting group and  $R_{18}$  and  $R_{19}$  maybe taken together with the nitrogen to which they are attached forming a cyclic system containing 3 to 10 carbon atoms with at least one substituent as defined for a substituted alkyl[.].

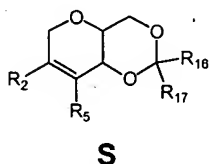
~~With~~ with the further proviso that:

1. ~~S~~stereoisomer (2R,3R,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 = \text{hydrogen}$ ,  $R_9 = R_{13} = R_{15} = \text{acetyl}$ , and  $R_{14} = \text{phthalimido}[[.]]$ ;
2. ~~S~~stereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{13} = R_{15} = \text{hydrogen}$ , and  $R_{14} = \text{dimethylamino hydrogen chloride}[[.]]$ ;
3. ~~S~~stereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{13} = R_{15} = \text{hydrogen}$ , and  $R_{14} = \text{trimethylaminoiodide}[[.]]$ ; and
4. ~~S~~stereoisomer (2R,3S,4R,5S) ~~cannot~~ does not have  $R_2 = R_5 = R_9 = R_{13} = R_{15} = \text{hydrogen}$ , and  $R_{14} = \text{N,N-(benzyloxycarboxy)methylamino}$ .

99. (Original) All stereoisomers of the compounds selected from the group consisting of 5-benzylamino-2-(tert-butyldimethylsilyloxymethyl)-tetrahydropyran-3,4-diol, 2-(tert-butyldimethylsilyloxymethyl)-5-(3-methoxyphenylamino)-tetrahydropyran-3,4-diol, 2-hydroxymethyl-5-phenylsulfanyl-tetrahydropyran-3,4-diol, 6-(tert-butyldimethylsilyloxymethyl)-5-hydroxy-4-(trimethylsiloxy)-tetrahydropyran-3-carbonitrile, 6-(tert-butyldimethylsilyloxymethyl)-5-hydroxy-4-(tert-butyldimethylsiloxy)-tetrahydropyran-3-carbonitrile, 5-benzyloxy-2-(tert-butyldimethylsilyloxymethyl)-tetrahydropyran-3,4-diol, 2-(tert-butyldimethylsilyloxymethyl)-tetrahydropyran-3,5-diol, and 5-azido-2-(tert-butyldimethylsilyloxymethyl)-tetrahydropyran-3,4-diol.

100-104. (Canceled).

105. (Currently amended). A ~~C~~ompounds of formula S, ~~where:~~



wherein  $R_2$ ,  $R_5$ ,  $R_{16}$  and  $R_{17}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl,

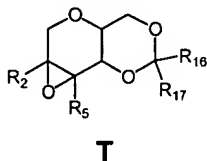
~~W~~with the further proviso that:

1. ~~S~~Stereoisomer (4aR,8aS) ~~cannot~~ does not have  $R_2 = R_5 = R_{16} =$  hydrogen and  $R_{17} =$  phenyl; and
2. ~~S~~Stereoisomer (4aR,8aS) ~~cannot~~ does not have  $R_2 = R_{16} =$  hydrogen,  $R_5 =$  (4-methoxyphenyl)-diphenylmethoxymethyl and  $R_{17} =$  phenyl.

106. (Currently amended). The compound of claim 105, wherein the compound includes all ~~At~~ stereoisomers of compounds of formula S, wherein  $R_2 = R_5 =$  hydrogen and  $R_{16} = R_{17} =$  methyl, wherein the specifically compounds is selected from the group consisting of (4aR,8aR)-2,2-dimethyl-4,4a,6,8a-tetrahydropyrano[3,2-d][1,3]dioxine, (4aS,8aS)-2,2-dimethyl-4,4a,6,8a-tetrahydropyrano[3,2-d][1,3]dioxine, (4aR,8aS)-2,2-dimethyl-4,4a,6,8a-tetrahydropyrano[3,2-d][1,3]dioxine, and (4aS,8aR)-2,2-dimethyl-4,4a,6,8a-tetrahydropyrano[3,2-d][1,3]dioxine.

107-110. (Canceled).

111. (Currently amended). ~~A~~ Compounds of formula T, ~~where:~~



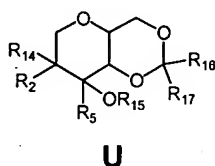
wherein  $R_2$ ,  $R_5$ ,  $R_{16}$  and  $R_{17}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl,

~~With~~ with the further proviso that:

- 1) ~~S~~Stereoisomer (1aR,3aR,7aR,7bR) ~~cannot~~ does not  $R_2 = R_5 = R_{16} = \text{hydrogen}$  and  $R_{17} = \text{phenyl}$ ;
- 2) ~~S~~Stereoisomer (1aS,3aR,7aR,7bS) ~~cannot~~ does not have  $R_2 = R_5 = R_{16} = \text{hydrogen}$  and  $R_{17} = \text{phenyl}$ ; and
- 3) ~~S~~Stereoisomer (1aR,3aS,7aS,7bR) ~~cannot~~ does not have  $R_2 = R_5 = R_{16} = \text{hydrogen}$  and  $R_{17} = \text{phenyl}$ .

112-116. (Canceled).

117. (Currently amended). A ~~C~~ompounds of formula U, ~~where:~~



wherein:

- a)  $R_2$ ,  $R_5$ ,  $R_{16}$  and  $R_{17}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl[.];
- b)  $R_{14}$  is selected from the group consisting of hydrogen, halogen, alkyl, substituted alkyl, aryl, heteroaryl, saturated heteroaryl, cyano, azido, amino, alkylamino, arylamino, hydrazino, alkylhydrazino, arylhydrazino, alkylcarbonylhydrazino, arylcarbonylhydrazino, hydroxy, alkoxy, aryloxy, alkylthio, arylthio, alkylcarboxy, arylcarboxy, N-protected amino acid, O-protected amino acid and a solid support[.];

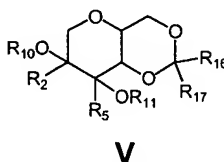
- c)  $R_{15}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group,

~~W~~with the further proviso that:

- 1) ~~If~~  $R_{16}$  is methyl then  $R_{17}$  ~~cannot be~~ is not methyl;
- 2) ~~If~~  $R_{16}$  is hydrogen then  $R_{17}$  ~~cannot be~~ is not phenyl;
- 3) ~~If~~  $R_2 = R_5 = R_{15} = R_{16} =$  hydrogen and  $R_{14} =$  hydroxy then  $R_{17}$  ~~cannot be~~ is not 3-nitrophenyl[[.]];
- 4) ~~If~~  $R_2 = R_5 = R_{14} = R_{15} = R_{16} =$  hydrogen then  $R_{17}$  ~~cannot be~~ is not 4-nitrophenyl[[.]];
- 5) ~~If~~  $R_2 = R_5 = R_{14} = R_{15} = R_{16} =$  hydrogen then  $R_{17}$  ~~cannot be~~ is not 4-methoxyphenyl[[.]];
- 6) ~~If~~  $R_2 = R_5 = R_{16} =$  hydrogen and  $R_{14} =$  methoxy and  $R_{15} =$  methyl then  $R_{17}$  ~~cannot be~~ is not 4-methoxyphenyl[[.]]; and
- 7) ~~If~~  $R_2 = R_5 = R_{15} = R_{16} =$  hydrogen and  $R_{14} =$  hydroxy then  $R_{17}$  ~~cannot be~~ is not 4-methoxyphenyl.

118-121. (Canceled).

122. (Currently amended). A ~~C~~compounds of formula V, ~~where:~~



wherein:

- a)  $R_2$ ,  $R_5$ ,  $R_{16}$  and  $R_{17}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl[.]; and
- b)  $R_{10}$  and  $R_{11}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group.

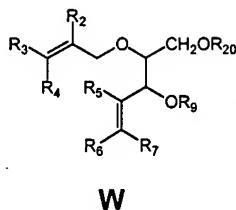
~~W~~with the further proviso that:

- 1. If  $R_{16}$  is methyl then  $R_{17}$  ~~cannot be~~ is not methyl;
- 2. If  $R_{16}$  is hydrogen then  $R_{17}$  ~~cannot be~~ is not phenyl;
- 3. If  $R_2 = R_5 = R_{10} = R_{11} = R_{16} =$  hydrogen then  $R_{17}$  ~~cannot be~~ is not 3-nitrophenyl[.];
- 4. If  $R_2 = R_5 = R_{16} =$  hydrogen and  $R_{14} =$  hydroxy then  $R_{17}$  ~~cannot be~~ is not 4-methoxyphenyl[.]; and
- 5. If  $R_2 = R_5 = R_{16} =$  hydrogen and  $R_{10} = R_{11} =$  methyl then  $R_{17}$  ~~cannot be~~ is not 4-methoxyphenyl.

123. (Currently amended). The compound of claim 122, wherein the compound includes all ~~All~~ stereoisomers of compound of formula V, wherein  $R_2 = R_5 = R_{10} = R_{11} =$  hydrogen and  $R_{16} = R_{17} =$  methyl, and compounds selected from the group consisting of (4aS,7R,8R,8aR)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, (4aS,7S,8S,8aR)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, (4aR,7R,8R,8aS)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, (4aS,7R,8R,8aS)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, (4aR,7S,8S,8aR)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, (4aS,7S,8S,8aS)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol, and (4aR,7R,8R,8aR)-2,2-dimethyl-hexahydropyrano[3,2-d][1,3]dioxine-7,8-diol.

124-128 (Canceled).

129. (Currently amended). ~~A~~ Compounds of formula **W**, ~~where:~~



wherein:

- a) R<sub>2</sub> and R<sub>5</sub> are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b) R<sub>3</sub> = R<sub>4</sub> = R<sub>6</sub> = R<sub>7</sub> = hydrogen or R<sub>3</sub>, R<sub>4</sub>, R<sub>6</sub>, R<sub>7</sub> are selected such that three out of four are hydrogen and the fourth is selected from the group consisting of alkyl, substituted alkyl and aryl; and
- c) R<sub>9</sub> and R<sub>20</sub> are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkylcarbonyl, substituted alkylcarbonyl, aryl, arylcarbonyl and hydroxyl protecting group.

~~W~~with the further proviso that:

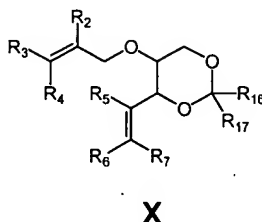
- 1) ~~S~~Stereoisomer (2R,3R) ~~cannot~~ does not have R<sub>3</sub> = R<sub>4</sub> = R<sub>6</sub> = R<sub>7</sub> = R<sub>9</sub> = R<sub>20</sub> = hydrogen;
- 2) ~~S~~Stereoisomer (2R,3R) ~~cannot~~ does not have R<sub>3</sub> = R<sub>4</sub> = R<sub>6</sub> = R<sub>7</sub> = hydrogen and R<sub>9</sub> = R<sub>20</sub> = benzoyl;
- 3) ~~S~~Stereoisomer (2R,3R) ~~cannot~~ does not have R<sub>3</sub> = R<sub>4</sub> = R<sub>7</sub> = R<sub>9</sub> = R<sub>20</sub> = hydrogen and R<sub>6</sub> = methyl;
- 4) ~~S~~Stereoisomer (2R,3R) ~~cannot~~ does not have R<sub>3</sub> = R<sub>4</sub> = R<sub>7</sub> = hydrogen and R<sub>6</sub> = methyl and R<sub>9</sub> = R<sub>20</sub> = benzoyl; and

5) If  $R_{20}$  = benzyl then  $R_3, R_4, R_6, R_7, R_9$  ~~cannot be~~ is not hydrogen.

130. (Currently amended) The compound of claim 129, wherein the compound includes all ~~All~~ stereoisomers of compound of formula W, wherein  $R_1$  = ethyl and  $R_2 = R_3 = R_4 = R_5 = R_6 = R_7 = R_9$  = hydrogen and compounds selected from the group consisting of (2S,3S)-2-allyloxy-pent-4-ene-1,3-diol, (2R,3S)-2-allyloxy-pent-4-ene-1,3-diol, and (2S,3R)-2-allyloxy-pent-4-ene-1,3-diol.

131-135. (Canceled).

136. (Currently amended). A ~~C~~compounds of formula X, ~~where:~~



wherein:

- a)  $R_2$  and  $R_5$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl;
- b)  $R_3 = R_4 = R_6 = R_7$  = hydrogen or  $R_3, R_4, R_6, R_7$  are selected such that three out of four are hydrogen and the fourth is selected from the group consisting of alkyl, substituted alkyl and aryl; and
- c)  $R_{16}$  and  $R_{17}$  are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl and aryl.

137. The compound of claim 129, wherein the compound includes all ~~All~~ stereoisomers of compounds of formula X, wherein  $R_2 = R_3 = R_4 = R_5 = R_6 = R_7$  = hydrogen and  $R_{16} = R_{17} =$



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methyl, and compounds selected from the group consisting (5R,6R)-5-allyloxy-2,2-dimethyl-4-vinyl-[1,3]dioxane, (5S,6S)-5-allyloxy-2,2-dimethyl-4-vinyl-[1,3]dioxane, (5S,6R)-5-allyloxy-2,2-dimethyl-4-vinyl-[1,3]dioxane, and (5R,6S)-5-allyloxy-2,2-dimethyl-4-vinyl-[1,3]dioxane.

138-173. (Canceled).